WHAT IS CLAIMED IS:

1. A switching regulator circuit for supplying two input potentials to a passive device that is driven by a potential difference between said two input potentials irrespective of potential differences between said two input potentials and a ground potential, comprising:

a low-voltage input terminal operable to receive a lower input potential that is lower one of said two input potentials;

a coil provided between said low-voltage input terminal and said passive device in series; and

a switching device, provided between said low-voltage input terminal and said passive device to be in series with said coil, operable to make said coil generate a potential higher than said lower input voltage by repeatedly switching whether or not a current is allowed to flow in said coil, to supply said generated potential to said passive device.

2. A switching regulator circuit as claimed in claim 1, wherein said switching device is an n-channel field effect transistor provided in series with said coil, and

said switching regulator circuit further comprises:

a detector operable to detect a supply voltage or a supply current supplied from said switching regulator circuit to said passive device; and

a controller operable to control a voltage applied to a gate of said n-channel field effect transistor based on said supply voltage or said supply current detected by said detector, to control a ratio of a period in which said n-channel field effect transistor is on or off.

3. A switching regulator circuit as claimed in claim 1, wherein said passive device is a light-emitting diode operable to emit light based on said potential difference between said input potentials supplied thereto.

4. A switching regulator circuit as claimed in claim 1, further comprising a smoothening filter operable to smoothen change of said potential difference between said input potentials supplied to said passive device.

5. A switching regulator circuit as claimed in claim 1, further comprising:

a high-voltage input terminal operable to receive a higher input potential that is higher one of said two input potentials; and

a diode, provided between said high-voltage input terminal and said passive device to be in series, operable to supply a forward-direction current from said high-voltage input terminal to said passive device.